

The opinion in support of the decision being entered today was *not* written for publication and is *not* binding precedent of the Board.

UNITED STATES PATENT AND TRADEMARK OFFICE

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BEFORE THE BOARD OF PATENT APPEALS  
AND INTERFERENCES

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*Ex parte* DAVID R. BATTISTE

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Appeal 2007-0877  
Application 09/705,316  
Technology Center 1700

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Decided: August 31, 2007

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Before EDWARD C. KIMLIN, BRADLEY R. GARRIS, and  
CHUNG K. PAK, *Administrative Patent Judges*.

PAK, *Administrative Patent Judge*.

DECISION ON APPEAL

This is a decision on an appeal under 35 U.S.C. § 134 from the Examiner's final rejection of claims 1 through 5, 8 through 12, 30 through 33, and 35 through 37, all of the claims pending in the above-identified application. We have jurisdiction pursuant to 35 U.S.C. § 6.

*STATEMENT OF THE CASE*

The subject matter on appeal is directed to “the use of Raman spectrometry in processes for the oligomerization of olefin monomers and in

methods of monitoring and controlling processes for oligomerizing olefin monomers” (Specification 1, ll. 14-16). Further details of the appealed subject matter are recited in representative claims 1 and 30 reproduced below:

1. A process for olefin oligomerization in a reactor, the process comprising:

providing a reaction mixture in the reactor, the reaction mixture comprising:

at least one reactant comprising at least one olefin monomer and optionally hydrogen; and

a catalyst system suitable for the oligomerization of olefin monomers;

contacting the olefin monomer and the catalyst system in a reaction zone;

monitoring an olefin oligomerization reaction by using low-resolution Raman spectrometry equipment to provide an output signal representative of one or more chemical components of the reaction; and

recovering an oligomer.

30. A trimerization process, the process comprising:

monitoring a trimerization reaction by using Raman spectrometry equipment,

wherein the Raman spectrometry equipment comprises low resolution Raman spectrometry equipment; and

recovering 1-hexene from the trimerization reaction.

As evidence of unpatentability of the claimed subject matter, the Examiner has relied upon the following references:

Alsmeyer	US 5,638,172	Jun. 10, 1997
Lashier	US 5,689,028	Nov. 18, 1997
Tanaka	US 5,750,817	May 12, 1998

As evidence of nonobviousness of the claimed subject matter, the Appellant has supplied the following evidence:

Lam, *Raman Technology for Today's Spectroscopists*, "A New Era in Affordable Raman Spectroscopy," 30-37 (Jun. 2004).

The Examiner has rejected the claims on appeal as follows:

- 1) Claims 1 through 5, 8 through 11, 30 through 33, 35, and 36 under 35 U.S.C. § 103(a) as unpatentable over the combined disclosures of Lashier and Alsmeyer; and
- 2) Claims 12 and 37 under 35 U.S.C. § 103(a) as unpatentable over the combined disclosures of Lashier, Alsmeyer, and Tanaka.

The Appellant appeals from the Examiner's decision rejecting the claims on appeal under 35 U.S.C. § 103(a).

#### *ISSUE*

Would a person having ordinary skill in the art have been led to employ low-resolution Raman spectrometry equipment to monitor an olefin oligomerization reaction to "provide an output signal representative of one or more chemical components of the reaction" required by the claims on appeal within the meaning of 35 U.S.C. § 103(a)?

## *PRINCIPLES OF LAW*

### *1. CLAIM INTERPRETATION*

During prosecution of the application, the Examiner “applies to the verbiage of the claims the broadest reasonable meaning of the words in their ordinary usage as they would be understood by one of ordinary skill in the art.” *In re Morris*, 127 F.3d 1048, 1054-056, 44 USPQ2d 1023, 1027 (Fed. Cir. 1997).

### *2. OBVIOUSNESS*

Under 35 U.S.C. § 103, the factual inquiry into obviousness requires a determination of: (1) the scope and content of the prior art; (2) the differences between the claimed subject matter and the prior art; (3) the level of ordinary skill in the art; and (4) secondary consideration (e.g., unexpected results). *Graham v. John Deere Co. of Kansas City*, 383 U.S. 1, 17-18, 148 USPQ 459, 467(1966). “[A]nalysis [of whether the subject matter of a claim is obvious] need not seek out precise teachings directed to the specific subject matter of the challenged claim, for a court can take account of the inferences and creative steps that a person of ordinary skill in the art would employ.” *KSR Int’l Co. v. Teleflex, Inc.*, 127 S. Ct. 1727, 1740-41, 82 USPQ2d 1385, 1396 (2007) *quoting In re Kahn*, 441 F.3d 977, 988, 78 USPQ2d 1329, 1336-337 (Fed. Cir. 2006); *see also DyStar Textilfarben GmbH & Co. Deutschland KG v. C.H. Patrick Co.*, 464 F.3d 1356, 1361, 80 USPQ2d 1641, 1645 (Fed. Cir. 2006)(“The motivation need not be found in the references sought to be combined, but may be found in any number of sources, including common knowledge, the prior art as a whole, or the nature of the problem itself.”); *In re Bozek*, 416 F.2d 1385, 1390, 163 USPQ

545, 549 (CCPA 1969)(“Having established that this knowledge was in the art, the examiner could then properly rely, as put forth by the solicitor, on a conclusion of obviousness ‘from common knowledge and common sense of the person of ordinary skill in the art without any specific hint or suggestion in a particular reference.’”). The common knowledge generally available to a person having ordinary skill in the art includes the Appellant's admission regarding what was known in the art at the time of the invention. *See In re Nomiya*, 509 F.2d 566, 570-71, 184 USPQ 607, 611-12 (CCPA 1975)(the admitted prior art in the an applicant's Specification may be used in determining the patentability of a claimed invention); *see also In re Davis*, 305 F.2d 501, 503, 134 USPQ 256, 258 (CCPA 1962).

#### *FACTS AND ANALYSES*

The Appellants have not challenged the Examiner's determination that it is well within the ambit of one of ordinary skill in the art to carry out Lashier's olefin oligomerization process in a series of reactors as taught by Tanaka. Nor have the Appellants challenged the Examiner's finding that Lashier's olefin oligomerization (polymerization) process is identical to the claimed olefin oligomerization process, except for employing the claimed low-resolution Raman spectrometry equipment to “provide an output signal representative of one or more chemical components of the reaction” as recited in claim 1.

Therefore, the dispositive question is whether one of ordinary skill in the art would have been led to employ the claimed low-resolution Raman spectrometry equipment to monitor the olefin oligomerization process of the

type discussed in Lashier to provide “an output signal representative of one or more chemical components of the reaction” as required by the claims on appeal. On this record, we answer this question in the affirmative.

The Examiner has found, and the Appellant has not disputed, that Lashier teaches a need for monitoring its polymerization (oligomerization) process for conversion, selectivity and/or products. (*Compare* Answer 3, with Br. and Reply Br. in their entirety). The Appellant also has not challenged the Examiner’s finding at page 3 of the Answer that it was well known to one of ordinary skill in the art that:

All of the conversion, selectivity and the amount polymer must be decided by measured amounts of components in the reaction. Once, [sic.] measured parameters are not desired ones, one having ordinary skill in the art would adjust the process[,] such as by changing the input and the output of the reactants, the catalyst and/or polymer product to/from the reactor. [*See* Br. and Reply Br. in their entirety.]

The Examiner has acknowledged that Lashier does not mention the claimed low-resolution Raman spectrometry equipment.

However, Lashier, by virtue of not specifically describing any particular monitoring device, implies that any conventional polymerization monitoring device may be used to monitor Lashier’s oligomerization (polymerization) process. The Examiner has correctly found at page 3 of the Answer that:

Alsmeyer discloses that chemical processes such as polymerization can be monitored in-situ by Raman spectrometry (the abstract; col. 1. lines 44-60)....

....

.... Alsmeyer discloses that the Raman spectrometry has a lots of advantages for monitoring chemical processes (col. 1, lines 22-27; col. 2, lines 47-51; col. 3, lines 15-30 and 59-67)....

The Examiner has also correctly found at page 6 of the Answer that the Raman spectrometry equipment taught by Alsmeyer is inclusive of both low and high resolution Raman spectrometry equipment (not limited to one or the other type of Raman spectrometry equipment). The Appellant has also acknowledged that low cost and suitable low-resolution Raman spectrometry equipment, such as R-2000 and R-2001c manufactured by Ocean Optics, Inc. and Boston Advanced Technologies, Inc., are known be commercially available (Specification 9).

Given the above knowledge, we concur with the Examiner that one of ordinary skill in the art would have been led to employ Raman spectrometry equipment, especially commercially available low cost, suitable low-resolution Raman spectrometry equipment, to monitor Lashier's oligomerization process as suggested by Alsmeyer. *KSR Int'l Co. v. Teleflex Inc.*, 127 S. Ct. at 1742, 82 USPQ2d at 1397 ("When there is a design need or market pressure to solve a problem and there are a finite number of identified, predictable solutions, a person of ordinary skill has good reason to pursue the known options within his or her technical grasp.") The Lam article relied upon by the Appellant also supports this position. It can be inferred from the Lam article that it is well within the ambit of one of ordinary to select appropriate high or low resolution Raman spectrometry equipment for given chemicals based on the cost and performance of the commercially available equipment.

The Appellant contends that one of ordinary skill in the art would have been discouraged from employing low-resolution Raman spectrometry equipment due to the closeness of the spectral peaks of the ethylene monomer and the 1-hexene product (e.g., Br. 6-15). In support of this contention, the Appellant refers to statements at pages 4 and 15 of the Specification (Br. 10 and Reply Br. 4). However, the Appellant's contention is unpersuasive for at least two reasons. First, both the claims on appeal and Lashier are not limited to producing the 1-hexene product from the ethylene monomer. They both include olefin oligomerization processes involving reactants and products different than ethylene monomer and 1-hexene, respectively. Yet, there is no indication that the commercially available low-resolution Raman spectrometry equipment is not useful for olefin oligomerization processes involving those different reactants and products not mentioned at pages 4 and 15 of the Specification. Second, the Appellant has not proffered any objective evidence to support the statements at pages 4 and 15 of the Specification. *In re De Blauwe*, 736 F.2d 699, 705, 222 USPQ 191, 196 (Fed. Cir. 1984). The Appellant has not relied on any objective evidence, including the Lam article, to support the statements in the Specification.

Accordingly, for the reasons set forth in the Answer and above, we determine that the preponderance of evidence weighs most heavily in favor of obviousness within the meaning of 35 U.S.C. § 103(a). Hence, we affirm the decision of the Examiner rejecting the claims on appeal under under 35 U.S.C. § 103(a).



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*ORDER*

The decision of the Examiner is affirmed.

No time period for taking any subsequent action in connection with this appeal may be extended under 37 C.F.R. § 1.136(a).

AFFIRMED

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